

**CALIFORNIA ENVIRONMENTAL QUALITY ACT
INITIAL STUDY**

The Department of Toxic Substances Control (DTSC) has completed the following document for this project in accordance with the California Environmental Quality Act (CEQA) [Pub. Resources Code, div. 13, § 21000 et seq] and accompanying Guidelines [Cal. Code Regs., tit. 14, § 15000 et seq].

PROJECT TITLE: Renewal of Hazardous Waste Treatment and Storage Permit for Lawrence Livermore National Laboratory – Site 300		CALSTARS CODING: PCA: 24315 Site-WP: 200180-50
PROJECT ADDRESS: Corral Hollow Road	CITY: Near Tracy	COUNTY: Alameda and San Joaquin
PROJECT SPONSOR: Lawrence Livermore National Laboratory	CONTACT: Stanley Terusaki	PHONE: (925) 422-4951

APPROVAL ACTION UNDER CONSIDERATION BY DTSC:			
<input type="checkbox"/> Initial Permit Issuance	<input checked="" type="checkbox"/> Permit Renewal	<input type="checkbox"/> Permit Modification	<input type="checkbox"/> Closure Plan
<input type="checkbox"/> Removal Action Workplan	<input type="checkbox"/> Remedial Action Plan	<input type="checkbox"/> Interim Removal	<input type="checkbox"/> Regulations
<input type="checkbox"/> Other (specify):			

STATUTORY AUTHORITY:
<input checked="" type="checkbox"/> California H&SC, Chap. 6.5 <input type="checkbox"/> California H&SC, Chap. 6.8 <input type="checkbox"/> Other (specify):

DTSC PROGRAM/ ADDRESS: Hazardous Waste Management Program	CONTACT: Alfred Wong	PHONE: (510) 540-3946
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PROJECT DESCRIPTION:

The project is a permit renewal for continued hazardous and explosive waste management operations at Lawrence Livermore National Laboratory (LLNL) Site 300. The scope of this project includes continued operations at the existing 3 hazardous waste management facilities identified below and described in the Permit Renewal Application dated June 2005. The scope of this project **does not** include other various operations conducted at Site 300.

Site 300 is an existing experimental test facility and is operated by Lawrence Livermore National Laboratory (LLNL), the United States Department of Energy (DOE), and National Nuclear Security Administration (NNSA). Site 300 is located in the eastern Altamont Hills about 13 miles southeast of the main LLNL site in Livermore and 8.5 miles southwest of Tracy (Figure 1). The site covers 11 square miles, most of which is in San Joaquin County. The western one-sixth of the site is located in Alameda County. Site 300 is primarily an explosives test facility that supports the LLNL weapons program in research, development, and testing associated with weapons components.

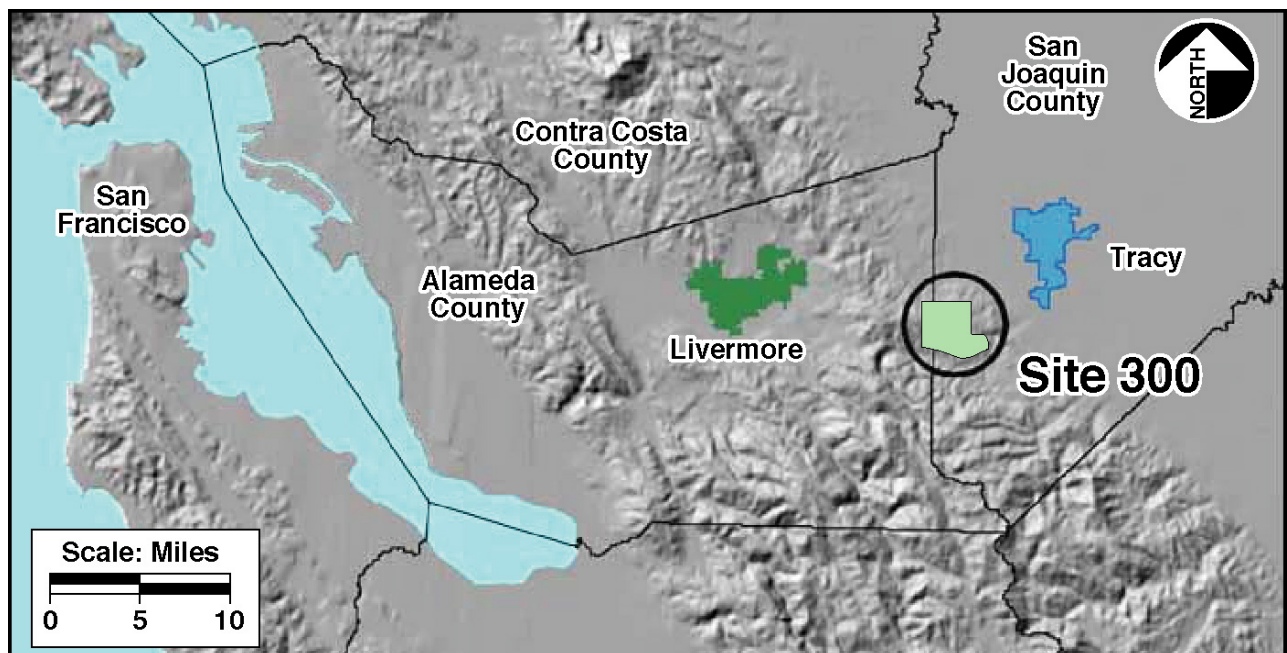


Figure 1. Location of LLNL Site 300

Some facilities at Site 300 are used in the chemical formulation of explosives; others mechanically press or machine explosive charges; still others radiographically inspect materials for defects, such as cracks and voids. Finally, some facilities assemble machined charges before they are sent to the on-site test firing facilities. Hazardous and explosives wastes generated from these activities and described in the waste analysis plan (Part III, Part B Permit Renewal Application) are sent to the onsite waste management facilities for treatment, packaging, or storing, and eventual shipment to a licensed off-site disposal facility.

This project involves operations at the following 3 hazardous waste management facilities (Figure 2): Explosives Waste Storage Facility (EWSF), Explosives Waste Treatment Facility (EWTF), and hazardous waste Container Storage Area (B883 CSA). These facilities only handle hazardous and explosives wastes generated at Site 300, and some explosives waste generated at LLNL main site (EPA ID No. CA2890012584). In 1996, the Department of Toxic Substances Control (DTSC) issued a permit to operate the B883 CSA and EWSF. DTSC issued a separate permit in 1997 for the operation of the EWTF. Site 300 is applying for a permit renewal for all 3 facilities under one permit application. These 3 facilities are described briefly in the paragraphs that follow. Detailed description for each of the 3 hazardous waste management facilities is included in Part IV, Facility Design, section of the Part B Permit Renewal Application.

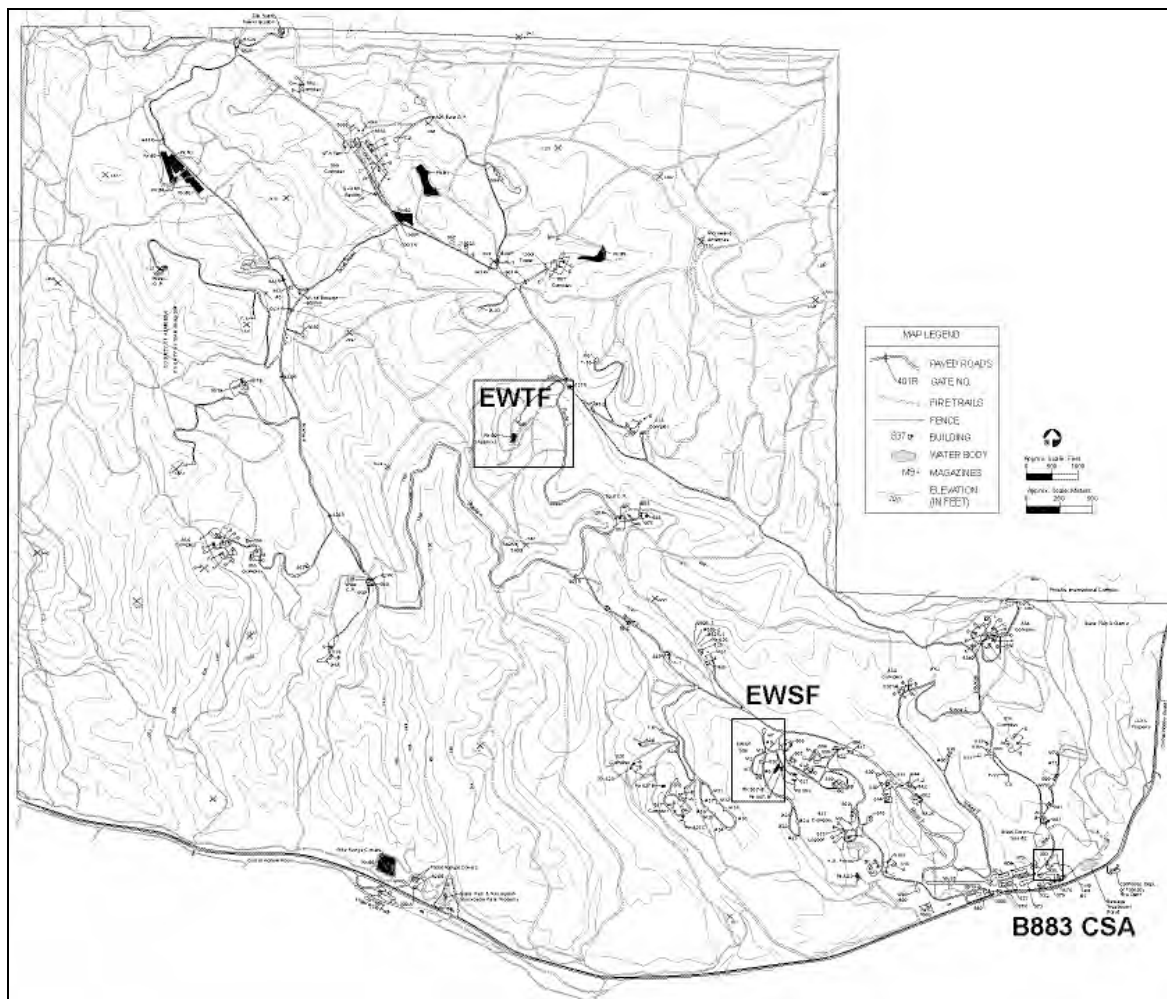


Figure 2. LLNL's three waste management facilities at Site 300.

The B883 CSA (Figure 3) is a 49-foot by 35-foot covered concrete pad surrounded by a concrete berm and a 6-foot-high cyclone fence. It stores containers of: hazardous waste and non-explosives waste from facility maintenance and operations and research activities.

The EWSF (Figure 4) consists of four earth-covered explosives waste storage magazines (M2, M3, M4, and M5, bunker-like buildings) and one prefabricated metal magazine (M-816). The earth-covered magazines range in size from approximately 143 square feet to 378 square feet. The prefabricated metal magazine measures 27 feet by 38 feet. The EWSF is primarily used to store solid explosives waste and explosives waste residue.

The EWTF (Figure 5) is dedicated to the treatment of explosives waste and explosives waste residue. "Treatment" converts waste to a less hazardous form that can be more safely handled, shipped, and disposed of. Burning and detonation (exploding) are the two types of treatment performed at EWTF. The number of treatments conducted per year varies. In the past 5 years, EWTF performed between 1 and 22 detonations per year and between 37 and 56 burns per year. EWTF burn and detonation operations are controlled remotely from a concrete and steel bunker.

The following units are used for treatment of explosive waste and storage of waste residue from treatment operations at EWTF:

- The **Open Burn Pan Unit (OB Unit)** is a 4-foot by 8-foot shallow rectangular, welded steel, watertight pan mounted on steel legs. The pan has a remotely controlled removable cover. It sits on an impermeable foundation. It is used to burn small pieces or powders of explosives that are suitable for burning as opposed to detonating. Burns are completed in 10 minutes or less.
- The **Open Burn Cage Unit (OB Unit)** is an 8-foot diameter cylindrical, ventilated, metal enclosure with an elevated base anchored to a concrete foundation. This unit is used to burn explosives-contaminated sludge, explosives-contaminated packing material, and explosives-contaminated laboratory waste. Propane fuel from a protected supply tank is supplied to the burn cage to assist the combustion process. The propane burners are lit remotely to begin the burning process which is typically completed in 35 minutes.
- The **Open Detonation Unit (OD Unit)** is a 30-foot by 30-foot gravel pad with a minimum gravel pack about 8 feet thick. This unit is used to detonate explosives wastes that cannot be safely treated by open burning. Detonation is instantaneous and normally vaporizes the waste.
- The **Explosive Waste Treatment Residue Storage Unit – Open Burn** is a prefabricated metal chemical storage cabinet with integrated secondary containment, located adjacent to the Open Burn Unit. It is used for storage of treatment residue from the Open Burn.
- The **Explosive Waste Treatment Residue Storage Unit – Open Detonation** is a prefabricated plastic storage cabinet with integrated secondary containment, located adjacent to the Open Detonation Unit. It is used for storage of treatment residue from the Open Detonation.

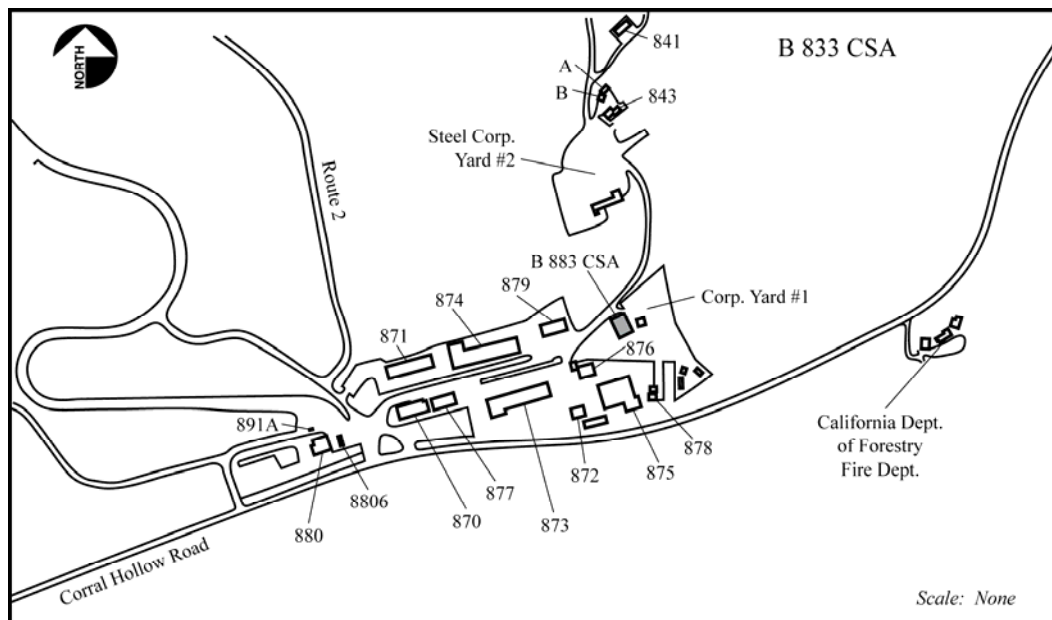


Figure 3. Building B833 Container Storage Area at Site 300.

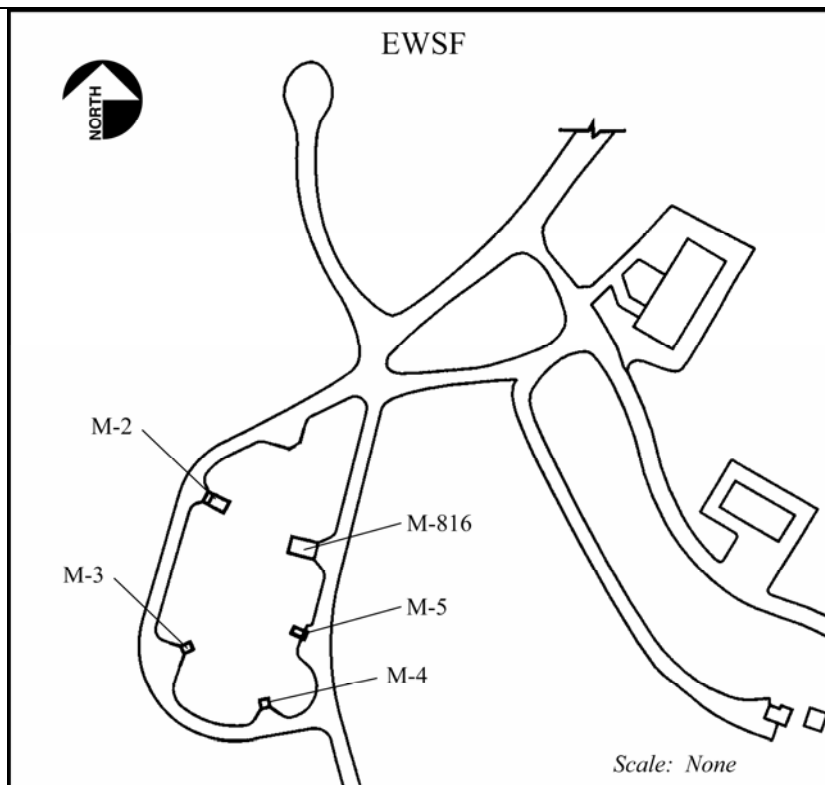


Figure 4. Explosive Waste Storage Facilities at Site 300.

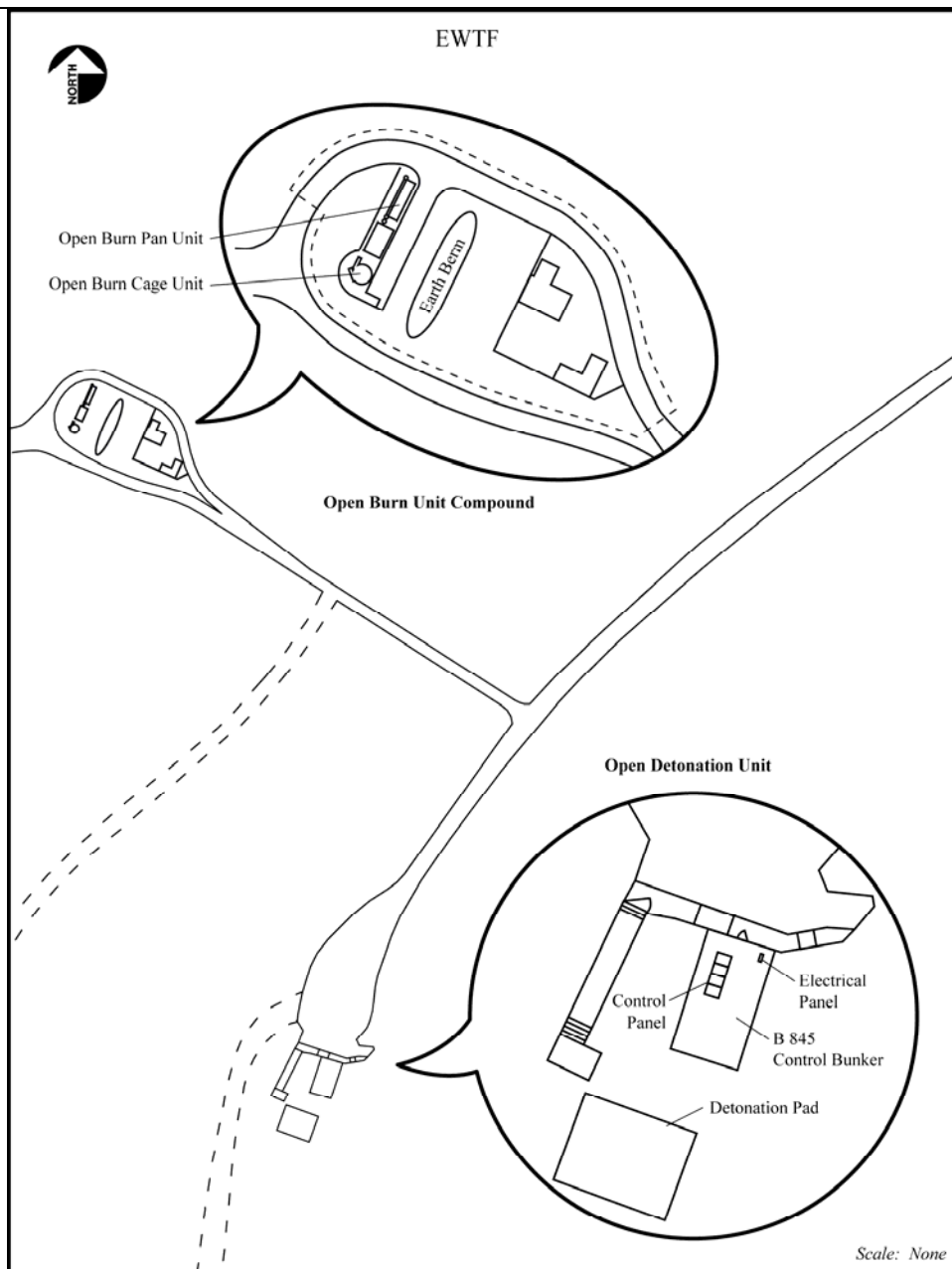


Figure 5. Explosive Waste Treatment Facilities at Site 300.

Project Activities:

Under the renewed permit, the existing 3 hazardous waste management facilities would be utilized without new construction or modification, and the same operations would continue, including the same types of hazardous and explosives wastes with the exception of the following 3 changes:

1. The maximum quantity for storing hazardous waste in B883 CSA would increase from 3,300 to 5,500 gallons which is the existing design capacity of B883.
2. Magazine 1 that was permitted for the storage of explosive waste would be removed from the permit, and the overall storage capacity for explosives wastes would be reduced by 1,622 pounds.
3. The treatment capacity at the Open Burn Pan Unit would be reduced from 150 pounds./event/day to 100 pounds./event/day.

Existing and proposed storage capacities and treatment rates at Site 300 waste management facilities are compared side-by-side in Table 1 and discussed below. The increase in quantity of hazardous waste in B883 CSA is an administrative change, and no construction, demolition, or physical modifications are proposed. The EWSF explosives waste storage capacity would be reduced by 1,622 pounds by removing Magazine 1 from the renewed

permit. The storage capacity provided by Magazine 1 is not necessary in order to safely store all Site 300 generated explosives wastes. Magazines 2, 3, 4 and 5 provide sufficient storage capacity. The Burn Pan treatment rate was reduced in order to conform to revised explosives safety standards.

Table 1. Proposed Storage Capacities and Treatment Rates at LLNL Site 300

Storage or Treatment Facility	Current Treatment/ Storage Capacity	Proposed Changes in this Permit Application
EWTF Burn Cage	260 pounds (50 pounds net explosive waste)/ event/day	No change
EWTF Burn Pan	150 pounds / event/day	Reduce treatment rate to 100 pounds/event/day
EWTF Detonation Pad	350 pounds / event/day	No change
EWTF Storage Area 1	275 gallons	No change
EWTF Storage Area 2	110 gallons	No change
EWSF Magazine 1	1,622 pounds	Remove from the permit; stop using for explosives waste storage.
EWSF Magazine 2	3,209 pounds	No change
EWSF Magazine 3	5,592 pounds	No change
EWSF Magazine 4	4,291 pounds	No change
EWSF Magazine 5	2,744 pounds	No change
EWSF Magazine 816	9,240 gallons (=168 x 55 gal drums)	No change
B883 CSA	3,300 gallons	Increase quantity of hazardous waste stored to 5,500 gallons

DTSC used the information provided in the following documents as basis for this Initial Study:

- Part "A" Application dated June 2005 and subsequent revisions dated August 2006;
- Part "B" Application (Operation Plan) dated June 2005 and subsequent revisions dated August 2006;
- Human Health and Ecological Risk Assessment (HHERA) dated October 2007;
- Soil Sampling Plan, dated October 2007;
- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3.

ENVIRONMENTAL IMPACT ANALYSIS:

1. Aesthetics

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Views of Site 300 primarily consist of natural, undeveloped areas with sparsely scattered buildings or groups of buildings. Site 300 is visible from Tesla Road, Corral Hollow Road, and the Carnegie State Vehicular Recreation Area. Tesla Road is designated as a scenic route in the 1994 Alameda County General Plan. When approaching Site 300 from the west on

Tesla Road, views of the site consist of rolling hillsides. No structures or landscaping on Site 300 are presently visible from this roadway. Views of Site 300 from the Carnegie State Vehicular Recreation Area consist primarily of undeveloped hillsides. Views of Site 300 from Corral Hollow Road consist primarily of buildings and supporting infrastructure.

All project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would occur in existing buildings and systems, and would not cause a substantial adverse effect on a scenic vista or scenic resources. The project would not substantially degrade the existing visual character or quality of the site and its surroundings, because no construction would occur. The project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area, because no new lighting would be installed. Therefore, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect on a scenic vista.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- c. Substantially degrade the existing visual character or quality of the site and its surroundings.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- d. Create a new source of substantial light of glare that would adversely affect day or nighttime views in the area.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, pages 5.2-17, and 5.3-17.

2. Agricultural Resources

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

All project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities are located at the existing Site 300 which consists primarily of natural, undeveloped areas with sparsely scattered buildings or groups of buildings. No portion of Site 300 is currently utilized for agriculture, and land use would not change for the foreseeable future. Therefore, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- b. Conflict with existing zoning or agriculture use, or Williamson Act contract.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, p.4.2-3, p. B-174.

3. Air Quality

Project Activities Likely to Create an Impact: Treatment via controlled open burn/open detonation of explosive waste (Figure 5).

Description of Baseline Environmental Conditions:

Lawrence Livermore National Laboratory – Site 300 is located in the San Joaquin Valley in the area designated as the San Joaquin Valley Air Basin by the California Air Resources Board (CARB). The air basin, which is defined by the Sierra

Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. The surrounding topographic features restrict air movement through and out of the basin and, as a result, impede the dispersion of pollutants from the basin. Inversion layers are formed in the San Joaquin Valley air basin throughout the year. An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below. During the summer, the San Joaquin Valley experiences daytime temperature inversions at elevations from 2,000 to 2,500 feet above the valley floor. During the winter months, inversions occur from 500 to 1,000 feet above the valley floor.

The climate of the project area is typical of inland valleys in California, with hot dry summers and cool, mild winters. Daytime temperatures in the summer often exceed 100 degrees, with lows in the 60's. In the winter, daytime temperatures are usually in the 50's, with lows around 35 degrees. Radiation fog is common in the winter, and may persist for days. Winds are predominantly up-valley (from the north) in all seasons, but more so in the summer and spring months. Winds in the fall and winter are generally lighter and more variable in direction.

The pollution potential of the San Joaquin Valley is very high. Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in summer are ideal conditions for the formation of photochemical oxidant, and the Valley is a frequent scene of photochemical pollution.

Both the U. S. Environmental Protection Agency (EPA) and the CARB have established ambient air quality standards for common pollutants under the Federal Clean Air Act and the California Clean Air Act. These ambient air quality standards are levels of contaminants that represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents.

The federal and California ambient air quality standards are summarized in Table 2 for important pollutants. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter (PM_{2.5} and PM₁₀).

The State of California regularly reviews scientific literature regarding the health effects and exposure to particulate matter and other pollutants. On May 3, 2002, the CARB staff recommended lowering the level of the annual standard for PM₁₀ and establishing a new annual standard for PM_{2.5} (particulate matter 2.5 micrometers in diameter and smaller). The new standards became effective on July 5, 2003.

TABLE 2
NATIONAL AND CALIFORNIA AIR QUALITY STANDARDS

Objective	Measurement	National	California
PM₁₀ - Particulate Matter Less Than 10 Microns			
To improve visibility & prevent health effects	Annual Arithmetic Mean ⁽²⁾	----	20 micro g/m ³
	24 hour concentration ⁽³⁾	150 micro g/m ³	50 micro g/m ³
PM_{2.5} - Particulate Matter Less Than 2.5 Microns			
To improve visibility & prevent health effects	Annual Arithmetic Mean ⁽²⁾	15 micro g/m ³	12 micro g/m ³
	24 hour concentration ⁽³⁾	35 micro g/m ³	No Separate State Standard

Ozone			
To prevent eye irritation and breathing difficulties	One hour concentration ⁽¹⁾	----	0.09 ppm 180 micro g/m ³
	8 hour concentration	0.075 ppm 147 micro g/m ³	0.070 ppm 137 micro g/m ³
Nitrogen Dioxide			
To prevent health risk and improve visibility	Annual Arithmetic Mean ⁽⁴⁾	0.053 ppm 100 micro g/m ³	0.030 ppm 57 micro g/m ³
	One hour	-----	0.18 ppm 339 micro g/m ³
Sulfur Dioxide			
To prevent increase in respiratory disease, crop damage, and odor problems	Annual Arithmetic Mean ⁽²⁾	0.030 ppm 80 micro g/m ³	-----
	24 hour mean concentration ⁽³⁾	0.14 ppm 365 micro g/m ³	0.04 ppm 105 micro g/m ³
	One hour mean concentration	-----	0.25 ppm 655 micro g/m ³
Carbon Monoxide			
To prevent carboxyhemoglobin levels greater than 2%	8 hour mean concentration ⁽³⁾	9 ppm 10 micro g/m ³	9 ppm 10 micro g/m ³
	One hour concentration ⁽³⁾	35 ppm 40 micro g/m ³	20 ppm 23 micro g/m ³
Lead			
To prevent health problems	30-day	-----	1.5 micro g/m ³
	3 month mean concentration ⁽²⁾	1.5 micro g/m ³	-----

ppm - parts per million

micro g/m³ - micro grams per cubic meter⁽¹⁾ not to be exceeded on more than one day per year, average over 3 years⁽²⁾ not to be exceeded⁽³⁾ not to be exceeded more than once per year

The primary air quality problems in the San Joaquin Valley Air Basin are ozone and particulate matter. Carbon monoxide has been a problem in the past within the San Joaquin Valley Air Basin in larger cities such as Fresno, Bakersfield, Modesto and Stockton.

Ozone is produced by chemical reactions, involving nitrogen oxides (NO_x) and reactive organic gases (ROG) that are triggered by sunlight. Nitrogen oxides are created during combustion of fuels, while reactive organic gases are emitted during combustion and evaporation of organic solvents. In the San Joaquin Valley Air Basin ozone is a seasonal problem, occurring roughly from April through October.

Suspended particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. "Inhalable" PM consists of particles less than 10 microns in diameter, and is defined as "suspended particulate matter" or PM₁₀. Particles between 2.5 and 10 microns in diameter arise primarily from natural processes, such as windblown dust or soil. Fine particles are less than 2.5 microns in diameter (PM_{2.5}). PM_{2.5}, by definition, is included in PM₁₀. Fine particles are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces and wood stoves produces fine particles.

Carbon monoxide is a local pollutant in that high concentrations are found only very near the source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. Concentrations typically are highest during stagnant air periods within the period November through January.

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Unlike criteria pollutants, no safe levels of exposure to TACs can be established. There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust.

Federal and state air quality laws require identification of areas not meeting the ambient air quality standards. These areas must develop regional air quality plans to eventually attain the standards. Under both the federal and state Clean Air Acts, the San Joaquin Valley Air Basin is a non-attainment area (standards have not been attained) for ozone, PM₁₀ and PM_{2.5}. The air basin is either attainment or unclassified for other ambient standards.

To meet federal Clean Air Act requirements, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has adopted an Ozone Attainment Demonstration Plan and in June 2003 adopted the 2003 PM₁₀ Plan. The most recent federal ozone plan (Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone, December 2002) determined that it could not be demonstrated that the federal ozone standards could be met by the required date of November 15, 2005. In December 2003, the SJVAPCD requested that the U.S. Environmental Protection Agency (EPA) downgrade the Valley's ozone status from "severe" to "extreme" nonattainment, and in April 2004 the U.S. EPA approved the downgrade. The downgrade avoids automatic sanctions and would extend the deadline for meeting attainment until November 15, 2010, but requires implementation of stricter controls on existing and future air pollutant sources.

On April 28, 2004, U.S. EPA finalized its approval of provisions of the San Joaquin Valley's 2003 PM₁₀ Plan and Plan Amendments as meeting the Clean Air Act requirements for serious PM₁₀ non-attainment areas. The 2003 PM₁₀ Plan and Plan Amendments address the Clean Air Act requirements for serious PM₁₀ non-attainment areas such as the San Joaquin Valley, including but not limited to a demonstration that best available control measures (BACM) are implemented for all significant sources and a demonstration that attainment is to be achieved as expeditiously as practicable.

To meet California Clean Air Act requirements, the SJVAPCD is currently drafting the 2003 Triennial Plan for updating the Air Quality Attainment Plan (AQAP) and addressing the California ozone standard. The California Legislature, when it passed the California Clean Air Act in 1988, excluded PM₁₀ from the basic planning requirements of the Act. The Act did require the CARB to prepare a report to the Legislature regarding the prospect of achieving the state ambient air quality standard for PM₁₀. This report did not recommend imposing a planning process similar to that for ozone or other pollutants for achievement of the standard within a certain period of time.

Air emissions from the open burn/open detonation of explosive waste at Site 300 are regulated by the SJVAPCD. The SJVAPCD is responsible for enforcing air quality standards within its jurisdiction established by the California Air Resources Board (CARB) and the federal Environmental Protection Agency. The Burn Cage and Burn Pan have operating permits from the SJVAPCD. These permits have established limits and conditions by which to control emissions of hazardous air pollutants.

The Burn Pan and Burn Cage are designed to provide primary containment of ash generated during and after treatment. For example, the Burn Pan is equipped with a remotely controlled movable cover to minimize potential spread of ash by precipitation or wind. Furthermore, ashes are collected following treatment and stored in containers to prevent wind dispersal.

Analysis as to whether or not project activities would:

a. Conflict with or obstruct implementation of the applicable air quality plan.

Impact Analysis:

The San Joaquin Valley Air Basin is a non-attainment area for ozone, PM₁₀ and PM_{2.5} under both the federal and state Clean Air Acts. The air basin is either attainment or unclassified for other ambient standards. The project activities, including treatment via controlled open burn/open detonation of explosive waste, are conducted in accordance with existing SJVAPCD rules and attainment plans under a permit issued by SJVAPCD. Therefore, the project does not conflict with or obstruct implementation of the applicable air quality plan.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Impact Analysis:

The project activities, including treatment via controlled open burn/open detonation of explosive waste, are conducted in accordance with existing SJVAPCD rules and federal and state air quality standards under permits issued by the SJVAPCD. Each year, SJVAPCD officials inspect operations at Site 300. Annual compliance inspections entail a review of permitted and exempt equipment, including documentation to demonstrate adherence to prohibitions; operating, record keeping, and notifications requirements; and emissions limitations. New equipment is also inspected prior to issuance of a new permit to operate, to ensure that equipment specifications comply with conditions specified in the authority to construct permit. In the last several years, there have been no enforcement actions or deficiencies noted. Therefore, the project does not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

c. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Impact Analysis:

The San Joaquin Valley Air Basin is a non-attainment area for ozone, PM₁₀ and PM_{2.5} under both the federal and state Clean Air Acts. The project activities, including treatment via controlled open burn/open detonation of explosive waste, are conducted under permit from SJVAPCD. As part of the annual permit renewal process, facilities supply information to the district on material throughput and/or usage for permitted sources at their sites. This information is entered into the district's database where it is used to estimate air emissions. The emissions inventory serves as a means to determine facility category (small, medium, or large) and thereby dictate requirements, such as those under the no-net-increase programs. Site 300 is currently well below both the precursor organic compound and nitrogen oxide emission thresholds that trigger requirements for no net increase and should remain so in the foreseeable future. Therefore, the project would not result in cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

d. Expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis:

The maximally exposed individual (MEI) is a hypothetical member of the public at a fixed location who, over an entire year, receives the maximum effective dose equivalent (summed over all pathways) from a given source of radionuclide releases to air. The site-wide MEI is located where the composite dose from all site sources is greatest. The Site 300 site-wide MEI has been located on the south-central boundary of the site bordering the Carnegie State Vehicular Recreation Area, approximately 3.2 kilometers south-southeast of the firing table at Building 851 (LLNL 2002bb), since the year 2000. Prior to 2000, the Site 300 site-wide MEI was located in an area operated by Primex Physics International (presently by Fireworks America), 300 meters outside the east-central boundary of Site 300 (2.4 kilometers east-southeast of the present Building 801 Contained Firing Facility).

The EWTF project activities involve treatment of explosive waste by controlled open burn/open detonation. This will generate airborne combustion products; however, the composition of the combustion products is dependent upon various explosives formulation and could include such compounds as carbon monoxide, oxides of nitrogen, dioxins, and furans. Particulates consist primarily of metal oxides, and carbon and nitrogen compounds. The effects of these combustion products have been studied in a human health and ecological risk assessment for the EWTF (October 2007), which states "... emissions from the EWTF should not be of concern for human health.", and that no additional impact will occur from the continuing operation of the EWTF. Additionally, the permit issued by the SJVAPCD limited the burning to one hour per day and prohibits emissions of PM₁₀ to no more than 0.0023 pound per pound of explosives treated. The facility is only allowed to conduct treatment on those days not designated by the SJVAPCD as "no burn" days. Since the EWTF is at least 2 miles from the MEI and the treatment processes are controlled and limited to one hour per day, and the health risk assessment determined no additional impacts from the continued operation of the EWTF, any impacts to sensitive receptors from substantial pollutant concentrations will be less than significant.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

e. Create objectionable odors affecting a substantial number of people.

Impact Analysis:

The nearest substantial number of people is the city of Tracy which is approximately 2 miles northeast of Site 300 border. The EWTF is located near the center of Site 300 and is approximately 5 miles from the city of Tracy. The EWTF project activities, including treatment via controlled open burn/open detonation of explosive waste, generate airborne combustion products and are conducted under permits issued by SJVAPCD. The amount of material to be burned is limited to 260 pounds of waste. Additionally, the permit issued by the SJVAPCD limited the burning to one hour per day and prohibits emissions of PM₁₀ to no more than 0.0023 pound per pound of explosives treated. The facility is only allowed to conduct treatment on those days not designated by the SJVAPCD as "no burn" days. Although smoke is generated from open burn/open detonation activities, the smoke is expected to dissipate prior to reaching the Site 300 border. Because of the limited amount of material burned, the one hour per day time limitation for treatment, and the distance to the city of Tracy, any impact from objectionable odors will be less than significant.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

f. Result in human exposure to Naturally Occurring Asbestos (see also Geology and Soils, f.).

Impact Analysis:

According to a California Department of Conservation, Division of Mines and Geology report, Site 300 is not likely to contain naturally occurring asbestos. Additionally, the project activities will not involve any excavations or ground-disturbing activities, and therefore any naturally occurring asbestos, if it was present, would not be disturbed. Naturally occurring asbestos would not be disturbed, because there would be no ground-disturbing activities associated with permit renewal. Since Site 300 is unlikely to contain naturally occurring asbestos and any naturally occurring

asbestos, if present, would not be disturbed because no ground-disturbing activities will be conducted, the project will not result in human exposure to naturally occurring asbestos.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

- Lawrence Livermore National Laboratory, September 30, 2005, "2004 LLNL Site Annual Environmental Report, UCRL-50027-04, page 3-8.
- Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, Volume 1, March 2005
- LLNL letter dated May 4, 2005, "Annual Emission Inventory for CY2004," to San Joaquin Valley Air Pollution Control District.
- SJVAPCD attainment status reviewed on 10/2/07 via web site: <http://www.valleyair.org/aqinfo/attainment.html>
- US DOE, 2007, Human Health and Ecological Risk Assessment for the Operation of the Explosive Waste Treatment Facility at Site 300 of the Lawrence Livermore National Laboratory, UCRL-TR-216940, Volume 1: Report of Results, page vii.
- California Department of Conservation, Division of Mines and Geology, A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos, August 2000.

4. Biological Resources

Project Activities Likely to Create an Impact: Treatment via controlled open burn/open detonation of explosive waste (Figure 5).

Description of Baseline Environmental Conditions:

Site 300 covers approximately 7,000 acres of land in eastern Alameda County and western San Joaquin County. The northern portion is characterized by rolling hills while the southern part consists of steep, deep canyons. The site was acquired in 1953, and since then no grazing or farming has taken place on the property. A relatively small part (approximately 5 percent) has been developed for LLNL activities; the remainder is undisturbed, except for controlled burning practices that occur annually. Approximately 2,000 acres of land during late May to early June are burned to control the potential for wildland fires to enter or exit the property.

Site-wide vegetation surveys have identified a total of 406 plant species. The following major vegetation types occur at Site 300: annual grassland, native grassland, coastal sage scrub, and oak woodland. Annual grassland covers more than 5,000 acres and is dominated by annual grasses introduced from Mediterranean Europe during the Spanish Colonial Era (e.g., slender oat and ripgut brome); native grassland covers more than 700 acres and is dominated primarily by one-sided bluegrass and purple needlegrass. The coastal sage scrub plant community type is dominated by California matchweed, California sagebrush, and black sage. Oak woodland, dominated by blue oak, occurs in scattered areas on steep slopes in the southern half of the site and covers approximately 150 acres. The understory is dominated by grassland species, such as brome grass and slender oat. Small areas of wetlands occur at the site.

Site 300, with large areas of wildland vegetation, interspersed of various plant community types, and availability of water at springs, provides habitat for a diversity of wildlife. Twenty amphibian and reptile species have been observed at Site 300. One hundred and three bird species have been observed at Site 300, including 84 genera and 39 families. Of the 103 species, 24 are current Federal or California species of special concern. Thirty mammal species have been observed on-site.

No known populations of rare or endangered/threatened animal or plant species are known to occur within the EWSF or CSA project boundaries or the immediate vicinity. EWTF has two special status species occurring at/near its operations. The western burrowing owl (*Athene cunicularia*), a species of concern (Federal and State), is resident to this area and inhabits the grassland habitats surrounding EWTF. The California red-legged frog (*Rana aurora draytonii*), a federally-threatened species, occurs in wetland habitat further downstream in the Mid-Elk Ravine drainage.

The immediate EWTF area has historically (before its construction) supported several nesting pairs of the western burrowing owl, a species of special concern listed by both the state and the federal government (California Department of Fish and Game and the U.S. Fish and Wildlife Service). In 1997, three known pairs of burrowing owls used the EWTF

“bowl” (description for the topography’s shape) for nesting and foraging activities. Since construction of EWTF, the number of nesting pairs has dropped to 1-2 pairs per year inhabiting the area. This decrease in numbers, though, appears consistent with a site-wide trend for burrowing owls in which numbers of breeding pairs have altogether decreased. Although the reasons for the decline are not known, similar swings in population size have occurred in other areas of its range and may be cyclical (i.e., food availability, winter severity, predator numbers) in nature.

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

No known substantial adverse effects to biological resources at the EWSF and CSA project sites are anticipated as a result of the ongoing project activities. These ongoing activities occur in existing facilities and therefore, no habitat modification (ground disturbance) would occur.

Potential impacts to western burrowing owls and California red-legged frogs are unlikely from continued project activities including the operation of EWTF. The burrowing owls have managed to maintain territories at EWTF along with its operational status during the past 9 years. Lack of owls at the site altogether would potentially indicate adverse impacts, but this is not the case. Shifts in numbers of burrowing owls at EWTF mimic site wide trends (which include remote areas distant from disturbance activities) and therefore appear consistent to the area.

The California red-legged frog population further downstream in Mid-Elk Ravine is currently being monitored. Red-legged frog habitation and breeding has occurred at this site this year. Red-legged frogs from the local environment have moved to the pools and are occupying it presently. Its distance and physical separation from the EWTF activities, plus successful colonization and breeding by the red-legged frog suggests that the EWTF operations have not impacted this species’ distribution, habits, or use of surrounding habitat.

Both the western burrowing owl and California red-legged frog are protected from ongoing activities at EWTF because the Burn Pan and Burn Cage are designed to provide primary containment of ash generated during and after treatment. The open burn units are located on paved areas on an impermeable foundation that prevents any accidental spills of waste or ash from directly reaching soil or groundwater. The Burn Pan is equipped with a remotely controlled movable cover to minimize potential spread of ash by precipitation or wind. Furthermore, ashes are collected following treatment and stored in containers to prevent wind dispersal. The 2005 Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory (Waste Appendix) states the following, “Activities would not entail any changes to the physical environment. No indirect impacts would occur because no runoff materials would impact sensitive habitats. Runoff is collected, analyzed and disposed of appropriately.” The 2007 human health and ecological risk assessment for EWTF states “... emissions from the EWTF should not be of concern for human health and may also be of *de minimis* concern with regard to ecological impacts.”

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

No known substantial adverse effects to biological resources are anticipated as a result of the ongoing project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities. These project activities occur in existing facilities; therefore, no habitat modification (ground disturbance) would occur, and there would be no substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Impact Analysis:

The nearest wetland to the EWTF is located approximately 1100 meters downgradient (straightline distance) in the Mid-Elk Ravine drainage where a riparian habitat containing a metapopulation of California red-legged frogs exists. Recent mitigation efforts to enhance this wetland for breeding/streamcourse habitat features have resulted in observation of at least 30 adult red-legged frogs occupying the site. Formal consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (as amended) initially in December of 2002 and again in June of 2005 for this enhanced habitat has resulted in monitoring requirements for the Mid-Elk Ravine frog population over the next ten years. These requirements include counting adults during the breeding season and documenting egg masses in the constructed pools. Therefore, continuing with the project activities is not anticipated to have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Impact Analysis:

No known substantial adverse effects to biological resources are anticipated as a result of the ongoing project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities. These project activities occur in existing facilities; therefore, no habitat modification (ground disturbance) would occur, and there would be no substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites..

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- e. Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact Analysis:

- f. No known substantial adverse effects to biological resources are anticipated as a result of the ongoing project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities. These project activities occur in existing facilities; therefore, no habitat modification (ground disturbance) would occur, and there would be no conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- g. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Analysis:

No known substantial adverse effects to biological resources are anticipated as a result of the ongoing project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities. These project activities occur in existing facilities; therefore, no habitat modification (ground disturbance) would occur, and there would be no conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.9 and Appendix B.
- US DOE, 2007, Human Health and Ecological Risk Assessment for the Operation of the Explosive Waste Treatment Facility at Site 300 of the Lawrence Livermore National Laboratory, UCRL-TR-216940, Volume 1: Report of Results, page 36.

5. Cultural Resources

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Archaeological surveys undertaken at Site 300 over the past 30 years have resulted in the recordation of 31 archaeological sites and isolated artifacts (UC LLNL 2005). The prehistoric archaeological sites indicate the area was used by early populations for hunting and for collecting and processing seasonal plant foods. This use is evidenced by small lithic scatters and rockshelters that contain bedrock mortars and possible small midden deposits. The historic archaeological sites provide evidence that homesteading, ranching, and mining were the predominant activities in the area during the historic period. The historic sites include an early 20th century homestead site; a sheep herders cabin; remnants of water and sewer lines; possible remnants of a small wood bridge; small trash dumps; a historic power/telegraph line; and a mine adit and associated features. Site 300 also contains remnants of the residential section of Carnegie. Carnegie was the location of a brick and pottery plant and town from about 1895 to 1912.

Of the 31 archaeological resources recorded at Site 300, the Department of Energy, National Nuclear Security Administration (DOE NNSA), as the federal agency responsible for historic properties at LLNL, concluded that 5 qualify for listing in the National Register of Historic Places because of their ability to yield information important in prehistory or history and their association with events that have made a significant contribution to the broad patterns of our history. The California State Historic Preservation Officer (SHPO) concurred with this determination (Donaldson 2005a). One of these historic properties is situated 1/3 mile from the EWTF. Because of the presence of an intervening ridge, this resource is not visible from the facility.

The project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities, were included in an assessment of LLNL's buildings, structures, and objects for potential historic significance that was undertaken in 2004 (Sullivan and Ullrich 2004). Based upon the assessment, the NNSA determined that the waste storage and treatment units do not qualify for listing in the National Register of Historic Places within a local, State, regional or national context. The SHPO concurred with this determination (Donaldson 2005b).

No paleontological resources are known to occur in the vicinity of the waste storage and treatment units. However, based upon local geology and soil types there is potential that currently unknown subsurface deposits could be present near each of the facilities.

Analysis as to whether or not project activities would:

- a. Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5.

Impact Analysis:

As described above, previous archaeological surveys and historic building assessments undertaken at LLNL indicate that no historical resources, as defined in 15065.5, are located within or immediately adjacent to the waste storage and treatment units proposed for this project. In addition, this project does not involve activities with the potential to impact known or potential historical resources: there will be no new construction or building modifications and no ground disturbance. Therefore, the project will not cause an adverse change in the significance of a historical resource.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- b. Cause a substantial adverse change in the significance of an archeological resource pursuant to 15064.5.

Impact Analysis:

Previous archaeological surveys undertaken at LLNL indicate that the closest archaeological resource to the waste storage and treatment units proposed for this project is situated 1/3 mile from the EWTF and is not visible from the facility. This project does not involve activities with the potential to impact this or any currently unknown archaeological resource that may be present below the ground surface.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis:

No paleontological resources or unique geologic features are known to exist in the vicinity of the waste storage and treatment units proposed for this project, although there is potential for the presence of currently unknown subsurface paleontological resources to be present below ground surface. This project does not involve activities with the potential to impact any such resources.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- d. Disturb any human remains, including those interred outside of formal cemeteries.

Impact Analysis:

No known human remains are situated at Site 300. In addition, because the project activities will not involve soil disturbance, any unknown human remains that potentially could be present below the ground surface will not be uncovered or otherwise disturbed.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

- Donald, Milford Wayne, 2005a. Letter from the California State Historic Preservation Officer to Karin King, Department of Energy, National Nuclear Security Administration, regarding Inventory and Evaluation of Archaeological Resources at Lawrence Livermore National Laboratory, Site 300, Alameda and San Joaquin Counties, California, April 26.

- Donaldson, Milford Wayne, 2005b. Letter from the California State Historic Preservation Officer to Karin King, National Nuclear Security Administration, regarding Historic Context and Building Assessments for the Lawrence Livermore National Laboratory Built Environment – Livermore, Alameda County, California. April 5.
- Sullivan, Michael Anne and Rebecca Ann Ullrich, 2004. Draft Historic Context and Building Assessments for the Lawrence Livermore National Laboratory Built Environment, September.
- University of California, Lawrence Livermore National Laboratory (UC LLNL), 2005. Inventory and Evaluation of Archaeological Resources at Lawrence Livermore National Laboratory, Site 300, Alameda and San Joaquin Counties, California. Prepared for Department of Energy, National Nuclear Security Administration, Livermore, California. February.

6. Geology and Soils

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

The geology and soils of Site 300 are described in section 4.5 of the 2005 LLNL SWEIS and in Part II of the Part B Permit Application (see reference below). Site 300 is located within the southeastern Altamont Hills and is characterized by northwest-southeast oriented ridges and canyons. The bedrock geology within Site 300 consists primarily of volcanoclastic sedimentary rocks of the late Miocene Neroly Formation. Older sedimentary rocks consisting of the mid-Miocene Cierbo Formation and the late Cretaceous Panoche Formation are exposed locally. At various locations within Site 300 the bedrock formations are overlain by semi-lithified sediments of Pliocene age and by Pleistocene to Holocene terrace deposits, colluvium, ravine fills and floodplain deposits. The bedrock structure is dominated by northwest-southeast oriented regional faults (Elk Ravine and Corral Hollow-Carnegie faults) and the east-west oriented Patterson Anticline, which crosses the central part of Site 300.

The EWTF's Burn Units (Burn Pan and Burn Cage) and Detonation Pad are located in the central part of Site 300 in distinct canyons and separated by a distance of approximately 900 feet. The two canyons intersect to form one canyon approximately 450 feet below each unit site. The Detonation Pad is located in a canyon that slopes approximately 10 degrees to the northeast. Parallel ridges rise approximately 150 feet west and 100 feet east of the Detonation Pad site. The Burn Units lie in a canyon that slopes approximately 10 degrees to the east. Ridges rise approximately 100 feet north and 100 feet south of the Burn Area site. Soils in the area of the EWTF generally vary from 1 foot thick on the ridge slopes to 30 feet thick in the ravine bottom. These typically dark brownish-gray and calcareous soils are variably composed of gravel, silt, and sandy silt in the valley bottom, gradually changing to clayey and sandy silt on the slopes. In the vicinity of the EWTF, these soils are erosion-resistant but experience shrinkage cracking due to clay desiccation. The EWTF is located just north of the Patterson Anticline.

The EWSF is located on a ridge in the northwestern part of the High Explosives Process Area of Site 300. The surface material at the EWSF consists of a 5 foot thick sequence of unsaturated, unconsolidated clay, silt, sand, and gravel that unconformably overlay semi consolidated, unsaturated silts, sands, and clays of the Tertiary nonmarine sequence (Tps). The Tps unit is about 40 feet thick in the vicinity of the EWSF and overlays the volcanoclastic bedrock.

The B883 CSA is located in the southeastern part of Site 300, situated on a relatively flat, graded surface between two north-south trending ravines. The ravines are separated by a distance of approximately 500 feet and slope 8 to 10 degrees southward toward the Corral Hollow Creek floodplain. North of B883 CSA the topography slope increases to approximately 15 degrees. B883 CSA is located on flat-lying soils that directly overlie Neroly Formation bedrock.

Existing soil and rock contamination is well characterized and being cleaned up in accordance with environmental regulations and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. Cleanup is managed by the following four government agencies: U.S. Environmental Protection Agency (EPA), the California Department of Toxic Substances Control (DTSC), Central Valley Regional Water Quality Control Board (RWQCB), and the U.S. Department of Energy (DOE). The contaminants most frequently found in soil and rock at Site 300 are TCE, perchloroethylene (PCE), high explosive compounds, nitrates, perchlorates, depleted uranium, metals, and tritium.

Analysis as to whether or not project activities would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- ❖ Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42).
- ❖ Strong seismic ground shaking.
- ❖ Seismic-related ground failure, including liquefaction.
- ❖ Landslides.

Impact Analysis:

The project would not expose people to potential substantial adverse effects, including the risk of loss, injury, or death caused by geologic characteristics of Site 300. Although seismic shaking is possible at Site 300, none of the hazardous waste management units are located within 200 feet of an active fault. Site 300 is located near the eastern margin of the seismically active San Francisco Bay region and is also within about four miles of the seismically active Coast Ranges-Central Valley boundary. Seismic monitoring by LLNL confirms microseismic activity within the Altamont Hills in the region surrounding Site 300. Facilities at Site 300 may experience earthquake shaking from three seismic sources. These sources are:

- A major earthquake on a principal Bay Region fault.
- A strong earthquake generated by a local fault within the Altamont Hills.
- A major earthquake on a regional fault along the Coast Ranges-Central Valley boundary or possibly beneath the western portion of the San Joaquin Valley.

Three general types of faults have been identified at Site 300:

- Regional northwest trending, high-angle, presumably strike-slip faults.
- Discontinuous, north-northeast-trending, normal faults in the east-central part of the site.
- West-northwest-trending, high-angle reverse and thrust faults located mainly on the south flank of the Patterson anticline.

From the standpoint of seismic safety, the regional northwest-trending strike-slip faults are the most hazardous. Two faults of this type have been mapped at Site 300: the Elk Ravine and the Corral Hollow-Carnegie Faults. The Elk Ravine Fault is a pre-Holocene, northwest-trending system of high-angle faults located within the valley that forms Elk Ravine in the northeastern part of Site 300. There is no evidence of recent displacement along any of the segments that comprise the Elk Ravine Fault system. This fault lies more than 3000 feet from B883 CSA and the EWSF, and approximately 700 feet away from the EWTF.

The Corral Hollow-Carnegie Fault is also a northwest-trending system of high-angle faults located along the southwestern Site 300 boundary. This fault system lies more than 3000 feet from the Hazardous Waste Management Facilities. The Corral Hollow-Carnegie Fault extends to the southeast beyond the Site 300 boundary. This fault system is considered to be active; it is judged capable of generating an earthquake in the range of magnitude 6.3 to 7.1. Should an earthquake occur, any damage to the waste management facilities would be discovered during regular inspections and maintenance activities, if not sooner. Furthermore, a large earthquake would invoke the procedures in the LLNL Emergency Plan, which includes inspecting waste management facilities.

Liquefaction is unlikely at much of Site 300, because it is underlain largely by bedrock and clay loam soils, which are not liquefiable. The soils in canyon bottoms are well drained and generally unsaturated. Landslides are unlikely because soils are shallow on the slopes above the waste management facilities.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- b. Result in substantial soil erosion or the loss of topsoil.

Impact Analysis:

The project would not result in substantial soil erosion or the loss of topsoil, because no construction or changes in vegetation would occur.

Conclusion:

- ☐ Potentially Significant Impact

- ☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

Impact Analysis:

The project is not located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially enhance potential for an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Impact Analysis:

The project area does not contain expansive soils or naturally occurring asbestos. Septic tanks would not be installed. Therefore, no further analysis is needed.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of water.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- f. Be located in an area containing naturally occurring asbestos (see also Air Quality, f.).

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.8.
- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Lawrence Livermore National Laboratory Site 300, UCRL-MI-213344, Part II.

7. Hazards and Hazardous Materials

Project Activities Likely to Create an Impact: Storage of hazardous and explosive waste (Figure 4); and treatment via controlled open burn/open detonation of explosive waste (Figure 5).

Description of Baseline Environmental Conditions:

Hazardous and explosive wastes are currently stored and treated at the Site 300 three waste management facilities, B883 CSA, EWSF, and EWTF. Wastes managed in each facility are identified in the Part B, Section III of the permit application (2005). The B883 CSA is used primarily as a container storage area for hazardous, non-explosives wastes. The EWSF is primarily used to store solid explosive wastes. The EWTF is dedicated for the treatment of explosives waste

Hazardous wastes that are stored in B883 are generated at Site 300 and include items such as: lab packs of expired chemicals and debris; waste solvents; acidic and caustic wastes; fluorescent light bulbs; spent batteries; waste oil; metals; spent filters; pesticide waste; and sludge.

Explosive wastes stored at the EWSF and treated at EWTF include items such as bulk explosives, pieces or powders from experiments, scraps of explosives from machining operations, explosives-contaminated equipment, packaging that is contaminated with explosives, and other residual explosives waste. NOTE: As stated in the draft permit, Part V, no radioactive wastes or wastes containing radioactive constituents, including low level radioactive wastes or constituents, are permitted for storage or treatment in any of the 3 hazardous waste management units covered by this project.

Open-burn operations at EWTF typically reduce explosives waste to mostly non-hazardous ash; however, the ash is characterized and shipped off-site for disposal at a permitted waste landfill. Open-detonations typically vaporize waste and the detonation pad is always inspected following a detonation and when residue remains, it is sampled and characterized for proper disposal, including at an offsite permitted waste landfill.

All project activities conducted at Site 300 are required to conform to the policies contained in the LLNL *Environment, Safety, and Health (ES&H) Manual* (LLNL, latest revision). These policies state that the design of any process, equipment, or apparatus shall include safety and environmental controls. Additionally, a safety analysis is required for facilities that handle radioactive and hazardous materials per U.S. Department of Energy (DOE) Orders.

Analysis as to whether or not project activities would:

- a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials.

Impact Analysis:

Hazardous and explosives wastes are properly packaged in accordance with DOT requirements for safe transportation. Trained technicians use designated trucks for the routine transport of hazardous and explosives wastes to the designated waste management facilities, EWSF, EWTF, and B883 CSA. Adherence to the safety policies described above reduces the hazard to the public to less than significant levels. Treatment of explosive waste at EWTF reduces the hazard to the public, because waste is treated on-site, where most of it is generated (some is generated at the LLNL Livermore site and transported to Site 300). On-site treatment of hazardous wastes eliminates the need for these wastes to be transported on public roads.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact Analysis:

Adherence to the safety policies described above and as required by DTSC and other regulatory agencies, reduces the hazard to the public to less than significant levels. The EWTF Burn Pan and Burn Cage are designed to provide primary containment of ash generated during and after treatment. The open-burn units are located on a concrete pad surrounded by paved areas, and are designed and operated to prevent any accidental spills of waste or ash from directly reaching soil or groundwater. The Burn Pan is equipped with a remotely controlled movable cover to minimize potential spread of ash by precipitation or wind. Furthermore, ashes are collected following treatment and stored in containers to prevent wind dispersal.

A report entitled "Human Health and Ecological Risk Assessment for the Operation of the Explosive Waste Treatment Facility at Site 300 on the Lawrence Livermore National Laboratory (2007)" was prepared especially for this project. (See Specific References below). This report was reviewed by DTSC experts in toxicology and ecological risk assessments, and concluded that the risk to both human health and the environment as a result of the operation of the EWTF units is not considered above acceptable levels as defined by the regulatory guidelines. For human health purposes, acceptable levels do not exceed one in million human cancers and a hazard quotient of less than one.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.

Impact Analysis:

No existing or proposed schools are located within one-quarter mile of Site 300.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to public or the environment.

Impact Analysis:

Site 300 is included on the Cortese list (Government Code Section 65962.5). However, continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not create an additional or significant hazard to the public or the environment. No construction activities are proposed as part of this project; therefore, ongoing operations would not disturb existing contamination at Site 300.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- e. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

Impact Analysis:

The project which comprises of continued operation at the existing EWSF, EWTF, and B883 CSA waste management facilities would not impair implementation of, or physically interfere with, LLNL's emergency response plan or emergency evacuation plan for Site 300.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Lawrence Livermore National Laboratory Site 300, UCRL-MI-213344.
- US DOE, 2007, Human Health and Ecological Risk Assessment for the Operation of the Explosive Waste Treatment Facility at Site 300 of the Lawrence Livermore National Laboratory, UCRL-TR-216940, Volume 1: Report of Results, page vii.

8. Hydrology and Water Quality

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Hydrology:

Site 300 is a large and hydrogeologically diverse site. Due to the steep topography and structural complexity, the water-bearing geologic units at Site 300 are discontinuous and vary in depth by tens to hundreds of feet. Ground water occurs in both bedrock and alluvial water-bearing zones and ranges in depth from 10 to 500 feet below the surface depending on location and topographic elevation. The main water supply for Site 300 is provided by Well 20, which is located in the southeastern part of Site 300 in the High Explosives Process Area. This well draws water from an aquifer in the lower Neroly Formation. In the northern part of Site 300, ground water occurs in both alluvial and bedrock water-bearing zones under unconfined to confined conditions. The mean ground water flow direction in the Neroly bedrock water-bearing zones in the northern part of the site is generally to the east to northeast and is controlled primarily by the topography and geologic structure, including the northwest-trending Elk Ravine fault. Differences in ground water elevation across the Elk Ravine Fault indicate that it may act as a hydraulic barrier in some areas. Ground water also occurs in isolated, perched water-bearing zones, and alluvial water-bearing zones that occupy the canyon bottoms in Elk Ravine and nearby ravines. The ground water in these alluvial water-bearing zones is ephemeral and highly reactive to heavy rainfall events. During extended drought periods, these alluvial water-bearing zones become de-saturated. Alluvial ground water flows in the down valley direction toward lower elevations.

The EWTF is located in the central part of Site 300. Ground water beneath the EWTF occurs in a low yield portion of the lower Neroly Formation at a depth of about 90 feet. Although very little is known about the ground water in this area, the mean flow direction is thought to be to the north-northeast.

The Building 883 CSA is located on an uplifted terrace near the southeastern boundary of Site 300. Ground water beneath Building 883 occurs in alluvial terrace deposits associated with the Corral Hollow Creek alluvium at a depth of about 40 feet. The mean ground water flow direction is to the east-southeast in the down slope direction of Corral Hollow Creek.

The EWSF is located along a ridge top in the northwestern part of the High Explosives Process Area that is located in the southeastern part of Site 300. Ground water beneath the EWSF occurs in isolated perched water-bearing zones at a depth of about 80 feet and in the regional lower Neroly water-bearing zone at a depth of about 400 feet. The mean ground water flow direction in these water-bearing zones is to the south-southeast.

Surface Water

There is very little perennial surface water at Site 300. Surface water at the site consists of intermittent runoff, springs, and natural and man-made ponds. Surface water sometimes occurs locally as a result of discharge from cooling towers. No lakes, reservoirs, or rivers lie within 1 mile of the hazardous waste management facilities. However, several seasonal streams lie within 1 mile of the units, with the closest one lying approximately 300 feet to the south of B883 CSA. Springs are also found within 1 mile of the EWTF and B883 CSA. A spring lies approximately 2000 feet southwest of the Open Detonation unit, and the nearest of the six springs within 1 mile of B883 CSA is about 1300 feet west of the unit. There are 24 springs at Site 300. Most of the springs have very low flow rates and are recognizable only by the presence of small marshy areas, pools of water, or vegetation. The major drainages at Site 300 are Elk Ravine in the East Firing Area/West Firing Area and Middle Canyon in the Pistol Range Area. Water flows in these drainages only after heavy storms. The occasional runoff from these drainages that does not infiltrate the ground eventually flows into Corral Hollow Creek. This creek is an intermittent stream that flows eastward along the southern boundary of Site 300 toward the San Joaquin Valley.

Analysis as to whether or not project activities would:

- a. Violate any water quality standards or waste discharge requirements.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not violate any water quality standards or waste discharge requirements. The design and operation of the waste management units comply with the Site 300 Storm Water Pollution Prevention Plan. Design features that protect storm water quality include ditches that route storm water away from the waste treatment facilities, and impermeable barriers to facilitate spill response and clean-up. The Burn Pan and Burn Cage are designed to provide primary containment of ash generated during and after treatment. The open burn units are located on paved areas on

an impermeable foundation that prevents any accidental spills of waste or ash from directly reaching surface or ground water. The Burn Pan is equipped with a remotely controlled movable cover to minimize potential spread of ash by precipitation or wind. Furthermore, ashes are collected following treatment and stored in containers to prevent wind dispersal.

In addition, the following operational procedures protect storm water quality: covering the open detonation pad when not in use; not operating the treatment facilities if there is a chance of rain; covering the open burn pan after treatment to prevent ash from escaping; removal of ash after treatment.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

- b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficient in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not affect groundwater supply or recharge. Groundwater supply would not be impacted because groundwater use is not expected to increase. Groundwater recharge would not be affected because no paving would occur.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not alter the existing drainage pattern of Site 300 because no construction or ground disturbance would occur.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not alter the course of any streams, nor would it increase the rate or amount of surface water runoff because no construction or ground disturbance would occur.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

- e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The waste management facilities have run-on and run-off controls that prevent water from entering the facilities, or polluted water from leaving the facilities. Some facilities, such as storage magazines and buildings, are completely waterproof. Open-air facilities such as the B883 CSA have roofs and fences that minimize the amount of precipitation that can enter them. In addition, berms prevent storm water from entering the secondary containment system and prevent any accumulated liquids within the secondary containment system from exiting the building.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

f. Otherwise substantially degrade water quality.**Impact Analysis:**

See responses above.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

g. Place within a 100-flood hazard area structures which would impede or redirect flood flows.**Impact Analysis:**

None of the waste management facilities (EWSF, EWTF, and B883 CSA) are located in a 100-year floodplain, and no new structures are proposed.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

h. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.**Impact Analysis:**

The waste management facilities (EWSF, EWTF, and B883 CSA) are not located near a river or lake therefore flooding is not an issue.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☒ No Impact

i. Inundation by sieche, tsunami or mudflow.**Impact Analysis:**

Site 300 is located in the mountains, over 45 miles from the coast and not adjacent to any lakes, therefore sieche and tsunami are not possible. Landslides have occurred at Site 300, but the topography and shallow, rocky soil above the waste management facilities make mudflows unlikely.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated

- ☐ Less Than Significant Impact
☒ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.8.
- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Lawrence Livermore National Laboratory Site 300, UCRL-MI-213344, Part II and Part IV.

9. Land Use and Planning

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Site 300 is located in the Altamont Hills, in San Joaquin and Alameda counties, approximately 17 miles east of Livermore and 8.5 miles southwest of Tracy (Figure 1). Site 300 is a restricted-access DOE experimental test facility used in the research, development, and testing of weapon components, as well as continued operation of EWSF, EWTF, and B883 CSA waste management facilities. DOE plans to use Site 300 in this capacity for the foreseeable future.

Land use surrounding Site 300 includes private ranch land used primarily for cattle grazing, state-owned land used for recreational motorcycle riding, a state ecological reserve, a fireworks storage facility, and privately-owned land planned for future residential development.

Analysis as to whether or not project activities would:

- a. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- b. Conflict with any applicable habitat conservation plan or natural community conservation plan.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not conflict with any applicable habitat conservation plan or natural community conservation plan.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities, Lawrence Livermore National Laboratory, Site 300, UCRL-MI-213344.

10. Mineral Resources

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Clay, coal, and silica are the three types of mineral resources that have been mined, or have the potential to be mined, in the vicinity of Site 300. Substantial clay deposits are associated with outcrops of the Eocene Tesla Formation near the old settlement of Tesla in Corral Hollow; they were mined from 1897 to 1912. Extensive clay deposits still remain, but the need for and cost of subsurface mining prevents the economic exploitation of these deposits. Lignite coal was discovered near the settlement of Tesla before 1857. This coal was often found layered with clay in the Tesla Formation and was mined between 1897 and 1902. Silica was mined intermittently in an unspecified location in the hills north and west of Corral Hollow from high silica Tesla Formation sandstone. The extent of this resource is presently unknown.

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities will not involve the disturbance or loss of any mineral resources; therefore, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

Impact Analysis:**Conclusion:**

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact Analysis:**Conclusion:**

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, page 4.8-12.

11. Noise

Project Activities Likely to Create an Impact: Treatment via controlled open burn/open detonation of explosive waste (Figure 5).

Description of Baseline Environmental Conditions:

Background noise levels at Site 300 are generally low due to a lack of development in the general area. Existing noise sources at Site 300 include vehicular traffic; heating, ventilating, and air conditioning equipment; construction activities (if any); a small-arms firing range; explosives testing (approximately 200 open-air tests per year); and treatment operations (detonations and burning) at EWTF. The number of EWTF open detonations conducted per year varies. In the past 5 years, EWTF performed between 1 and 22 detonations per year. In addition, background noise is generated by off-site sources such as over-flying aircraft using facilities at the Tracy Municipal Airport, the explosive test site facilities operated by Fireworks America, Teledyne, and SRI International, traffic on Corral Hollow Road, and the Carnegie State Vehicular Recreational Area.

EWTF open burns and open detonations generate noise. The noise from the open burn units is similar to a household furnace or fireplace. Noise generated from the operation of the open detonation unit is louder, and in addition, it is impulse (short-blast) noise. Impulse noise generated by detonations lasts for a fraction of a second. Therefore, this type of noise has a different effect on humans and is regulated differently. For instance, California Code of Regulations deems

it acceptable for employees to be exposed to continuous noise of up to 85 decibels over an 8 hour work day, whereas exposure to impulse noise can be up to 140 decibels.

LLNL Site 300 has researched the effects of impulse noise associated with explosives research testing. High explosive tests are conducted regularly (daily and/or weekly) at Site 300, within the Contained Firing Facility and on open firing tables. In 1991, LLNL evaluated this type of noise and, in an effort to limit nuisance to nearby residents and preclude damage to property, imposes a maximum allowable sound pressure level of 126 decibels, not to be exceeded in nearby populated areas. This value is considerably lower than some known thresholds and is considered to be well within the safe limit for both humans and structures in residential areas. LLNL uses “blast forecasting” for open-air detonations at Site 300. Blast forecasting considers explosive type and detonation characteristics together with various sound wave propagation factors, such as atmospheric attenuation, local topography, ground surface roughness, and monitored meteorological conditions, to predict the magnitude and location of impulse noise levels. Blast forecasting is used to determine the maximum explosive weight that can be detonated without an irritant effect on the nearest populated areas; i.e., maintains sound levels within the self-imposed 126-decibel limit.

Analysis as to whether or not project activities would:

- a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Impact Analysis:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not expose people to or generate noise levels in excess of standards or ordinances. There are only two types of noise standards that could be associated with the continued operation of the waste management facilities: 1) a San Joaquin County ordinance; and 2) Federal and State standards for employee health and safety.

San Joaquin County has adopted a noise ordinance (Section 9-1025.9 of the San Joaquin County Code - Development Title [San Joaquin County Code 2002]), which stipulates maximum allowable exposure levels associated with proposed activities that will create new stationary noise sources or expand existing noise sources. Waste management activities (EWSF, EWTF, and B883 CSA) are existing sources, not new sources; therefore, this ordinance does not apply.

OSHA (Occupational Safety and Health Administration) noise standards (29 CFR 1910.95) and California Code of Regulations (Title 8, Section 5096) noise standards apply to Site 300 employees that are exposed to noise. The project activities of continued operation of EWSF, EWTF, and B883 CSA waste management facilities are required to conform to the above standards, as well as the policies contained in the LLNL *Environment, Safety, and Health (ES&H) Manual* (LLNL, latest revision). These policies state that the design of any process, equipment, or apparatus should include safety and environmental controls. The LLNL Hazards Control Department performs noise surveys to ensure that operations are in compliance with applicable standards and EWTF would not be allowed to operate if it were in violation of any standard, including those related to noise.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☒ Less Than Significant Impact
- ☐ No Impact

- b. Exposure of persons to or generation of excessive groundbourne vibration or groundbourne noise levels.

Impact Analysis:

None of the project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA, generate groundbourne vibration or groundbourne noise levels that humans at off-site locations can feel. Similar to the detonation noise described above, employees that conduct the detonations can feel ground vibration in the EWTF control room, but employees at the edge of the site cannot feel it, hear it, nor can they see objects shaking.

There are likely several reasons that EWTF's open detonations cannot produce ground vibration noticeable to off-site people:

- The pressure wave generated by the blast takes the path of least resistance, which is up into the air. Therefore, the pressure does not “couple” well to the ground. People are more likely to “feel” the sound wave traveling through the air than they are to feel the pressure wave traveling through the earth.

- The detonations occur on a thick gravel pad that absorbs more of the pressure than other materials would (solid rock, concrete, etc.).
- Detonating 350 lbs of explosives waste (maximum allowed per event, per day) does not produce enough energy to propagate seismic waves far enough to reach outside the fenceline to produce shaking that humans could feel (only a sensitive seismic instrument could detect it).

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

- c. A substantial permanent increase in ambient noise levels in the vicinity above levels existing without the project.

Impact Analysis:

The project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA would not create a substantial permanent increase in ambient noise levels. Approval of this project would not increase the number of detonations or the traffic levels around Site 300, which contribute to ambient noise levels.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

- d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impact Analysis:

The project activities which comprise of continued operation of EWSF, EWTF, and B883 CSA would not create a substantial temporary or periodic increase in ambient noise levels. Approval of this project would not increase the number of detonations.

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

- Koper, K.D., T.C. Wallace, and D. Hollnack, Seismic analysis of the 7 August 1998 truck-bomb blast at the American Embassy in Nairobi, Kenya, Seismological Research Letters, 70, 512-521, 1999.
- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, sections 4.12 and 5.3.10.

12. Population and Housing

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities does not include new housing, jobs, infrastructure development, or in any way induce any population growth in the area, directly or indirectly. It will not displace existing population or housing. Therefore, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Induce substantial population growth in area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities, Lawrence Livermore National Laboratory, Site 300, UCRL-MI-213344.

13. Public Services

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

The existing fire protection and emergency services at Site 300 are provided by the LLNL Emergency Management Division and by off-site fire protection agencies through mutual aid agreements. LLNL Fire Station No. 2 is located at Site 300. This facility is part of the overall Emergency Management Division of LLNL and is operated under the direction of the LLNL fire chief. At a minimum, four personnel are on duty 24 hours a day at Fire Station No. 2. One chief officer, who is responsible for Site 300, is on call at the Livermore Site during normal business hours and from an off-site residence outside of normal business hours. LLNL Fire Station No. 2 is equipped with two large (1,000 and 1,250 gallons per minute) pumpers, the smaller of which is four-wheel drive; one smaller four-wheel drive pumper (325 gallons per minute); and one ambulance.

The Office of Investigative Services and Protective Force Division of the Safeguards and Security Department provide police protection and security services at LLNL. It is the function of the Protective Force Division to provide protection for LLNL personnel and assets. This protection is provided through several channels, including access control, fixed access and surveillance points, random vehicle and foot patrols, response elements, and special response team elements. The Protective Force Division provides emergency response service to the Livermore Site and Site 300, and has contingency plans to cover credible emergencies, including work stoppages, bomb threats, natural disasters, site-wide evacuations, callout procedures, satellite command center activation procedures, executive protection, alarm response procedures, and civil disorders. LLNL participates in emergency response agreements with the Livermore Police Department, the Alameda County Sheriff's Department, the San Joaquin County Sheriff's Department, the California Highway Patrol (CHP), and the Federal Bureau of Investigation (FBI).

Because LLNL provides its own fire and police protection, this project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not result in a need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for fire and police protection. The project will not cause the population to increase in the region; therefore, it will not increase the need for more schools, parks, or other public facilities. Based on this, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

- ❖ Fire protection
- ❖ Police protection
- ❖ Schools
- ❖ Parks
- ❖ Other public facilities

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.4.

14. Recreation

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities will not cause a change in site use; therefore, they will not increase the use of existing neighborhood and regional parks or other recreational facilities. The project activities will not include creation of recreational facilities or require construction or expansion of recreational facilities. Therefore, no further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Potentially Significant Unless Mitigated
- ☐ Less Than Significant Impact
- ☐ No Impact

- b. Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact

- ☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.4.

15. Transportation and Traffic

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Regional access to Site 300 is from I-580 to Corral Hollow Road. Alternately, travel between the City of Livermore and Site 300 is by way of Tesla Road. Tesla Road changes to Corral Hollow Road at the Alameda-San Joaquin county line. There is one primary access gate to Site 300 from Corral Hollow Road plus another gate for the pistol range.

Between Site 300 and the City of Livermore, the daily traffic on Tesla Road averages approximately 4,500 vehicles per day. In this area, Tesla Road is a winding two-lane roadway with no paved shoulders; the terrain is rolling. Posted speed limits range from 45 to 55 miles per hour in the vicinity of Site 300. East of the Site 300 access, Corral Hollow Road continues as a two-lane winding roadway, 4.1 miles to an interchange with I-580 south of the city of Tracy. Tesla Road is receiving increased usage during commute periods because of congestion on I-580 through the Altamont Pass.

Transportation issues associated with this project which comprise of continued operation of EWSF, EWTF, and B883 CSA waste management facilities, mostly involve hazardous and explosive waste shipments to and from Site 300. Approximately 200 explosives shipments arrive per year and 100 are sent per year. All off-site shipments are conducted in accordance with U.S. Department of Transportation regulations.

The estimated total number of vehicles on Site 300 is 169. Vehicle types are light and heavy trucks and passenger automobiles. Other on-site traffic includes contractor vehicles. Traffic associated with the hazardous waste management facilities consists of waste shipments that average five trips per day; security patrols (12 trips per 24 hours); maintenance (three trips per week); and unscheduled visits such as inspections, audits, etc. (three trips per week). The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities would not increase the number of vehicle trips to and from the site. The number of employees who work at the waste management facilities is not expected to change. Therefore, the project would not cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system. The project does not involve modification to roads, emergency access, or parking capacity. The project does not conflict with adopted policies, plans, or programs supporting alternative transportation. Therefore, no further analysis was deemed necessary.

Analysis as to whether or not project activities would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated

- ☐ Less Than Significant Impact
☐ No Impact

- c. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- d. Result in inadequate emergency access.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- e. Result in inadequate parking capacity.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, section 4.13.
- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Lawrence Livermore National Laboratory Site 300, UCRL-MI-213344.

16. Utilities and Service Systems

Project Activities Likely to Create an Impact: None

Description of Baseline Environmental Conditions:

Site 300 is supplied with water from a system of wells. The existing capacity of usable wells is approximately 930,000 gallons per day. PG&E supplies electrical power to Site 300. From 1998 to 2002, Site 300 consumed an average of 16.3 million kilowatt-hours per year. An outside vendor supplies propane to Site 300. Propane is used as a supplemental fuel in open burn operations; it is stored in a fuel tank at EWTF.

Some of the sanitary sewage generated at Site 300 is disposed of through septic tanks and leach fields or cesspools at individual building locations. The portion of sanitary sewage generated at the General Services Area of Site 300 is piped into an asphalt membrane-lined oxidation pond at an average rate of 2,100 gallons per day.

All activities associated with this project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities at Site 300, are conducted in accordance with applicable federal and state regulations, permits obtained under these regulations, and DOE orders. The waste categories routinely generated on-site under normal operations include radioactive waste (low-level waste and mixed low-level waste); hazardous waste, which includes Resource Conservation and Recovery Act (RCRA) hazardous (chemical and explosives) waste; state-regulated waste; TSCA waste (primarily asbestos, PCBs, and biohazardous [medical] waste); nonhazardous solid waste; and process wastewater.

The project which comprises of continued operation of EWSF, EWTF, and B883 CSA waste management facilities requires use of the existing hook-ups for electricity, propane, telephone service, and water. No additional hook-ups are required. No impact on agencies providing utility services is anticipated or will result in new utility systems or alter existing ones. No further analysis is deemed necessary.

Analysis as to whether or not project activities would:

- a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact

☐ No Impact

- e. Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- f. Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

- g. Comply with federal, state, and local statutes and regulations related to solid waste.

Impact Analysis:

Conclusion:

- ☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☐ No Impact

References Used:

- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3, sections 4.14 and 4.15, and Appendix B.

Mandatory Findings of Significance

Based on evidence provided in this Initial Study, DTSC makes the following findings:

- a. The project ☐ has ☒ does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.
- b. The project ☐ has ☒ does not have impacts that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
- c. The project ☐ has ☒ does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

Determination of Appropriate Environmental Document:

Based on evidence provided in this Initial Study, DTSC makes the following determination:

☒ The proposed project COULD NOT HAVE a significant effect on the environment. A **Negative Declaration** will be prepared.

☐ The proposed project COULD HAVE a significant effect on the environment. However, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **Mitigated Negative Declaration** will be prepared.

☐ The proposed project MAY HAVE a significant effect on the environment. An **Environmental Impact Report** is required.

☐ The proposed project MAY HAVE a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **Environmental Impact Report** is required, but it must analyze only the effects that remain to be addressed.

☐ The proposed project COULD HAVE a significant effect on the environment. However, all potentially significant effects (a) have been analyzed adequately in an earlier Environmental Impact Report or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier Environmental Impact Report or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project. Therefore, nothing further is required.

Certification:

I hereby certify that the statements furnished above and in the attached exhibits, present the data and information required for this initial study evaluation to the best of my ability and that the facts, statements and information presented are true and correct to the best of my knowledge and belief.

Preparer's Signature

Date

Alfred Wong

Senior Hazardous Substances Engineer

510-540-3946

Preparer's Name

Preparer's Title

Phone #

Branch or Unit Chief Signature

Date

Ray Leclerc

Team Leader, Permit Renewal Team

916-255-3582

Branch or Unit Chief Name

Branch or Unit Chief Title

Phone #

ATTACHMENT A**INITIAL STUDY REFERENCE LIST**

Hazardous Waste Treatment and Storage Facilities, LLNL Site 300

- Donald, Milford Wayne, 2005a. Letter from the California State Historic Preservation Officer to Karin King, Department of Energy, National Nuclear Security Administration, regarding Inventory and Evaluation of Archaeological Resources at Lawrence Livermore National Laboratory, Site 300, Alameda and San Joaquin Counties, California, April 26.
- Donaldson, Milford Wayne, 2005b. Letter from the California State Historic Preservation Officer to Karin King, National Nuclear Security Administration, regarding Historic Context and Building Assessments for the Lawrence Livermore National Laboratory Built Environment – Livermore, Alameda County, California. April 5.
- Koper, K.D., T.C. Wallace, and D. Hollnack, Seismic analysis of the 7 August 1998 truck-bomb blast at the American Embassy in Nairobi, Kenya, Seismological Research Letters, 70, 512-521, 1999.
- Lawrence Livermore National Laboratory, September 30, 2005, 2004 LLNL Site Annual Environmental Report, UCRL-50027-04, page 3-8.
- LLNL letter dated May 4, 2005, "Annual Emission Inventory for CY2004," to San Joaquin Valley Air Pollution Control District.
- SJVAPCD web site; accessed on 10/2/07: <http://www.valleyair.org/aqinfo/attainment.htm>
- Sullivan, Michael Anne and Rebecca Ann Ullrich, 2004. Draft Historic Context and Building Assessments for the Lawrence Livermore National Laboratory Built Environment, September.
- University of California, Lawrence Livermore National Laboratory (UC LLNL), 2005. Inventory and Evaluation of Archaeological Resources at Lawrence Livermore National Laboratory, Site 300, Alameda and San Joaquin Counties, California. Prepared for Department of Energy, National Nuclear Security Administration, Livermore, California. February.
- US DOE, 2005, Final Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, DOE/EIS-0348 and DOE/EIS-0236-S3.
- US DOE, 2007, Human Health and Ecological Risk Assessment for the Operation of the Explosive Waste Treatment Facility at Site 300 of the Lawrence Livermore National Laboratory, UCRL-TR-216940, Volume 1: Report of Results.
- US DOE, 2005, Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Lawrence Livermore National Laboratory Site 300, UCRL-MI-213344.
- US Fish and Wildlife Service. 2004. *Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities; Final Rule* (69:149 FR August 4, 2004).
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